

## **II. ALTERNATES CONSIDERED**

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This chapter describes the physical and operating characteristics and presents estimated capital costs and operating and maintenance costs for each alternate under consideration for the I-270/US 15 Multi-Modal Corridor. This chapter also describes the initial set of alignment and technology alternates considered and explains the reasons for eliminating certain of them from further consideration in this study.

### **A. INITIAL TRANSPORTATION STRATEGIES**

#### **1. Congestion Management System (CMS)**

The beginning stage of the study was used to define the CMS for the I-270/US 15 Corridor (known as Corridor #2 in Maryland's CMS, completed in December 1998). The function of the CMS is to provide for a systematic, comprehensive analysis of the causes and solutions to traffic congestion and mobility needs in 29 identified transportation corridors throughout the State. By applying performance measures defined in the CMS, and included in the Purpose and Need chapter, to the existing and planned facilities in the Corridor, the CMS is able to provide a scale of the extent of congestion and permit evaluation of the effectiveness of mobility-enhancing strategies for the movement of people and goods.

#### **2. CMS Identified Transportation Strategies**

The following is a brief description of each of the initial transportation strategies identified by the CMS analysis. A full list of the CMS strategies is presented in **Appendix H** of this DEIS.

##### **a. Baseline (No-Build)**

The Baseline (No-Build) strategy serves as a basis for comparison for all other strategies. It includes elements adopted from the 1997 Constrained Long Range Transportation Plan (CLRP) (i.e., MARC commuter rail service from Point of Rocks to Frederick). No major capacity improvements would be made on I-270 or US 15. Only routine maintenance and spot improvements, such as resurfacing, re-striping, signing, and lighting, are included.

##### **b. Transportation System Management (TSM)/Transportation Demand Management (TDM)**

A number of relatively low-cost strategies, which are meant to improve the overall operation of the existing transportation system without adding capacity, are classified as TSM/TDM strategies. These include intersection/interchange improvements, hiker/biker trails, additional telecommuting centers, additional park and ride lots, encouraging flexible work hours, growth management strategies, and Intelligent Transportation Systems (ITS) technology.

**c. Transitway**

This strategy consists of either a busway or light rail transit along a separate transitway alignment with stations and parking facilities. This facility would generally parallel I-270 while serving the Corridor's residential areas and business centers.

**d. High Occupancy Vehicle (HOV) Lanes**

This strategy consists of adding an additional lane in each direction along I-270, which would be designated for vehicles carrying more than one (HOV 2+) or two (HOV 3+) passengers. The additional lane would begin at I-370 in the southbound direction and at MD 121 in the northbound direction and would continue north to I-70.

**e. Highway Widening**

This strategy consists of adding new general-purpose and auxiliary lanes along I-270 and US 15. The existing highway would be widened to the inside (in the median), to the outside, or both. Widening I-270 to add a general-purpose lane could be accomplished in combination with the HOV strategy.

**3. Implementation Table**

**Table II-1** contains an Implementation Table that has been created to track all of these strategies as part of the Maryland CMS.

**4. Preliminary Alternates Development**

The project team concluded, after preliminary analyses of each of the initial transportation strategies, that no single transportation strategy alone would meet the projected travel demand within the Corridor. Therefore, the project team began combining strategies into several multi-modal alternative packages. In addition to a No-Build Alternate and a TSM/TDM Alternate, three multi-modal alternative packages, known as Combination Alternates A, B and C, were developed. Each of these packages included elements from the No-Build and TSM/TDM alternates as well as a series of highway improvements and a transit component. The Combination Alternates that were originally developed included the following elements:

**TABLE II-1  
CORRIDOR IMPLEMENTATION**

| <b>Recommended Congestion Management Strategy</b>  | <b>Potential Agency Identified for Implementation</b>                          | <b>Implementation Time Frames<br/>Short 1-5 years Medium 5-10 years<br/>Long 10+ years</b> |
|--|--|--|
| <b><i>TSM Strategies</i></b> <ul style="list-style-type: none"> <li>• Intersection Improvements.</li> <li>• Interchange Improvements (MD 85, MD 26).</li> <li>• Hiker/Biker Trails.</li> </ul>   | SHA<br>SHA<br>SHA; Counties  | Medium<br>Medium/Long<br>Medium/Long   |
| <b><i>TDM Strategies</i></b> <ul style="list-style-type: none"> <li>• Encourage/Initiate Park and Ride Lots.</li> <li>• Encourage/Initiate Telecommuting Centers.</li> <li>• Encourage/Initiate Flexible Work Hours.</li> </ul>  | SHA; MTA Counties<br>MPO; Counties<br>Counties                                 | Short/Medium/Long<br>Medium/Long<br>Short/Medium   |
| <b><i>Growth Management Strategies</i></b> <ul style="list-style-type: none"> <li>• Strengthen local land use plans to attract and focus compact, mixed-use growth in designated areas or Priority Funding Areas (PFAs).</li> <li>• Discourage development in rural areas not designated for growth.</li> <li>• Improve balance between jobs/housing.</li> </ul>   | Counties<br><br>Counties<br><br>Counties                                       | Long<br><br>Long<br><br>Long   |
| <b><i>Transit Improvements</i></b> <ul style="list-style-type: none"> <li>• Corridor Cities Transitway from Shady Grove Metro Station to COMSAT.</li> <li>• Preserve right-of-way for the Corridor Cities Transitway from COMSAT to Frederick City.</li> <li>• Enhanced express bus service from the Corridor Cities Transitway to Shady Grove Metro.</li> <li>• Enhanced feeder/local bus service throughout the Corridor.</li> </ul>       | MTA; WMATA<br><br>Counties<br><br>MTA; WMATA; Counties<br>MTA; WMATA; Counties | Medium/Long<br><br>Short/Medium/Long<br><br>Medium/Long<br>Medium                          |
| <b><i>Highway Capacity Improvement</i></b> <ul style="list-style-type: none"> <li>• General use lane expansion (MD 118 to Biggs Ford Road).</li> <li>• Additional auxiliary lane (Jefferson Street to MD 26).</li> <li>• Additional Collector-Distributor or local lanes (I-370 to Father Hurley Boulevard).</li> <li>• (HOV lane expansion (I-370 to I-70).</li> <li>• Interchange Management (with or without HOV only access).</li> </ul> | SHA<br><br>SHA<br><br>SHA<br>SHA<br>SHA  | Medium/Long<br><br>Medium/Long<br><br>Medium/Long<br>Medium/Long<br>Medium/Long            |
| <b><i>Intelligent Transportation System (ITS) Strategies</i></b> <ul style="list-style-type: none"> <li>• Enhanced Traveler Advisory Radio (TAR).</li> <li>• Increased usage of Office of Coordinated Highways Action Response Team (CHART)/Transportation Operations Center (TOC).</li> </ul>   | SHA<br>SHA; Counties   | Short/Medium<br>Short/Medium   |

**Note:** Potential funding sources are presented in Section V-F.

**a. Combination Alternate A**

Highway widening consists of additional general-purpose lanes in both counties, extended HOV lanes, auxiliary and Collector-Distributor lanes, and interchange improvements.

Transit improvements consist of the Corridor Cities Transitway (CCT) from Shady Grove Metro Station to COMSAT as a separate alignment for a busway or light rail transit system. Both light rail transit (LRT) and bus rapid transit (BRT) modes are being evaluated as part of the CCT Alignment. Therefore, both Combination Alternate A-1 (LRT) and Combination Alternate A-2 (BRT) are being evaluated.

**b. Combination Alternate B**

Highway widening consists of additional general-purpose lanes in both counties, extended HOV lanes, auxiliary and Collector-Distributor lanes, and interchange improvements. For this alternate, both high occupancy vehicle lanes and express “premium” bus services would utilize the inside HOV lane. In addition, High Occupancy/Toll (HOT) lanes were considered in this alternate. HOT lanes provide the opportunity for single occupancy vehicles to purchase their admittance into this lane for a premium, more reliable trip, based on the traffic flow or congestion in the HOV/HOT lane. However, MDOT has decided not to pursue HOT lanes further. (refer to Section II.B.8 for more information). Transit improvements consists of premium/express bus service from the Shady Grove Metro Station to Frederick as a busway along the HOV lanes of I-270 with exclusive slip ramps for key intermodal connections.

**c. Combination Alternate C**

Highway widening consists of additional general-purpose lanes in both counties, extended HOV lanes, auxiliary and Collector-Distributor lanes, and interchange improvements. As per the Montgomery County Master Plans, only one additional inside lane is being pursued on I-270 and I-70. This lane will be evaluated as either on HOV lane or a general-purpose lane

Transit improvements consists of the Corridor Cities Transitway (CCT) from Shady Grove Metro Station to COMSAT as a separate alignment for a busway or light rail transit system. Both light rail transit (LRT) and bus rapid transit (BRT) modes are being evaluated as part of the CCT Alignment. Therefore, both Combination Alternate C-1 (LRT) and Combination Alternate C-2 (BRT) are being evaluated.

An Alternates Workshop/Public Hearing was held in March 1997 and Combination Alternates A, B and C were presented. The purpose of this meeting was to share the progress of the study with the public and to gain feedback on the additional results of the transportation strategies analyses. These analyses yielded the investigation of additional strategies, such as extended C-D lanes, premium express bus service, proposed new interchanges and a new roadway called Technology Boulevard in Frederick County. These meetings also gave the public the opportunity to provide private verbal or written testimony for inclusion in the official “Public Transcript” concerning the preliminary Combination Alternates A, B, and C, and, specifically, the recommendation to preserve or protect right-of-way for the Corridor Cities Transitway alignment from the Shady

Grove Metro Station to Frederick. Protective right-of-way acquisitions for this transitway could begin subsequent to these public hearings, as part of the local master plan process.

Informational Public Meetings were held in February 2001. The information presented at the meetings included more detailed engineering plans of highway and transitway alignments for Combination Alternates A, B, and C. Preliminary right-of-way and environmental impacts, preliminary cost estimates, and traffic conditions for 2020 No-Build and Build scenarios were also presented. These meetings provided the public with an opportunity to submit written comments on the Combination Alternates presented.

Following the February 2001 Public Meetings, the alternatives were repackaged in an effort to simplify the Combination Alternates. The alternates were renamed and include general-purpose lanes, auxiliary lanes, HOV lanes, collector-distributor (C-D) lanes, LRT, BRT, Premium Bus and others. Specifically, the following alternatives are under consideration:

- Alternate 1: No-Build Alternate
- Alternate 2: TSM/TDM Alternate
- Alternate 3A: Master Plan HOV/LRT Alternate (formerly Combination Alternate C-1 (LRT))
- Alternate 3B: Master Plan HOV/BRT Alternate (formerly Combination Alternate C-2 (BRT))
- Alternate 4A: Master Plan General-Purpose/LRT Alternate (formerly Combination Alternate C-1 (LRT))
- Alternate 4B: Master Plan General-Purpose/BRT Alternate (formerly Combination Alternate C-2 (BRT))
- Alternate 5A: Enhanced Master Plan HOV/General-Purpose/LRT Alternate (formerly Combination Alternate A-1 (LRT))
- Alternate 5B: Enhanced Master Plan HOV/General-Purpose/BRT Alternate (formerly Combination Alternate A-2 (BRT))
- Alternate 5C: Enhanced Master Plan HOV/General-Purpose/Premium Bus Alternate (formerly Combination Alternate B)

## **B. ALTERNATES ELIMINATED FROM CONSIDERATION**

The following is a brief description of alternates no longer being considered in the I-270/US 15 Multi-Modal Corridor Study, as well as the reasons for their elimination.

### **1. Heavy Rail Transit**

A heavy rail transit (Metrorail) extension from the Shady Grove Metro station to the Metropolitan Grove MARC station was not carried forward for further study. This alignment is also not identified as a recommended transportation project in the Maryland-National Capital Park and Planning Commission's (M-NCPPC) Transportation Policy Report. This type of facility would be dependent on higher land use densities within this area than are called for in current local master plans. In addition, the right-of-way requirements would preclude the opportunity to provide adjacent bicycle/pedestrian facilities. Underground construction would impact CSX

freight service and result in substantial construction cost increases of up to \$300 million above the CCT western alignment (this figure only covers an estimated cost of an alignment to Metropolitan Grove; therefore, the cost of heavy rail transit to COMSAT would be more expensive). If not constructed underground, heavy rail transit would require visually intrusive aerial structures or fencing and it would have less operational flexibility. Up to 65 displaced buildings could result from the at-grade, double track option.

## **2. CSX Alignment for Light Rail Transit**

A CSX light rail alignment between the Shady Grove Metro station and the Metropolitan Grove MARC station was not carried forward for further study. This alignment does not provide service to emerging growth areas west of I-270. It is also inconsistent with local and regional 2020 land use priorities. Underground construction of this facility, much like the heavy rail transit option, would impact CSX freight service and result in significant cost increases in the range of \$34 to \$48 million dollars above the CCT western alignment. There are also potential impacts to historic resources along this alignment. Further, up to 65 building displacements could result from the at-grade, double track option.

## **3. Corridor Cities Transitway (CCT) Alignment from COMSAT to Frederick**

Transit along the CCT alignment from COMSAT to Frederick was not carried forward for further study. Projected ridership for the project horizon year is not sufficient to support the increased operational and maintenance costs associated with extending the proposed transit service to Frederick. The CCT alignment and the COMSAT terminus were chosen based on cost effectiveness, local and state transit service goals, ridership and impacts. Extensions of the CCT alignment further north into Clarksburg were also considered during the study. However, based on past experience by the Maryland Department of Transportation, parking needs are most significant at terminal stations. The Clarksburg Master Plan assumes limited parking and a high level of pedestrian access at the Clarksburg Town Center. A major reason for selecting the COMSAT terminus is that this location provides for a parking facility with approximately 1,000 spaces that will service the majority of commuters accessing the transitway from the north. According to Year 2025 travel demand forecasts, a significant number of morning transitway riders will gain access to the transitway at this location and will travel through to the Shady Grove Metro Station, where they will connect with the Metrorail Red Line.

COMSAT has also been identified as a potential location for a maintenance yard and shop facility. If this site were selected, it would also provide for a critical component of the CCT necessary to support and address the operational requirements for future extensions of the transitway north of COMSAT to Clarksburg, Urbana, and Frederick. While construction of the transitway north of COMSAT in this study is not being considered at this time, the project team recommends that the CCT transitway alignment through Clarksburg to the City of Frederick be maintained within the Washington Metropolitan Region's Long Range Plan as well as local master plans for right-of-way preservation and implementation beyond 2025.

#### **4. Monorail**

Monorail technology is not being carried forward for detailed study. Monorail has not previously been implemented in this region and has not been used for a system of this magnitude. A monorail system able to serve the anticipated demand of the Corridor Cities would be at least as visually obtrusive as a typical elevated rail system. Although a monorail would be less visually obtrusive for smaller systems, a smaller system would not be able to meet the anticipated demand of a system that could ultimately be built to Frederick. Therefore, a larger system with larger aerial structures and stations would be needed. Monorail is typically used to serve smaller areas and shorter routes. Since reasonable alternatives exist, the project team recommends that the Corridor Cities Transitway not be the testing ground for what could be the largest monorail system ever built.

In addition, considerable operational and safety issues also exist. The structures required for monorail systems make providing crossovers (facilities that allow trains to move from one set of tracks to another) very difficult and expensive. Without crossovers, service would be interrupted for track maintenance or failure of a train or track segment. Montgomery County's own Transportation Policy Report states "...given the importance in Montgomery County of using transit investment to support focused development, LRT is preferred for the alignments being considered".

#### **5. Technology Boulevard**

The Technology Boulevard alignment was not carried forward for further study. The alignment was proposed to run along the east side of I-270, extending north from an intersection with proposed MD 75 extended to connect with MD 80 and MD 355 in Urbana. Technology Boulevard was intended to provide a parallel roadway alignment to I-270 that would serve existing and planned development in Frederick County, as well as provide for a future transitway right-of-way in the median. The travel demand modeling efforts for the study showed that the proposed roadway did not provide relief to the traffic congestion along I-270, and was therefore dropped from consideration in this study. However, the Technology Boulevard alignment is currently under consideration in the Frederick County master plan process.

#### **6. Watkins Mill Road Extension Interchange**

The Watkins Mill Road Extended interchange was not carried forward for further study as part of the I-270/US 15 Multi-Modal Corridor Study. The interchange was moved from this project to allow the State Highway Administration to proceed with a separate project planning study. The proposed interchange is located along I-270 in Gaithersburg, south of the Middlebrook Road interchange and Seneca Creek State Park, and north of the MD 124 interchange. An Environmental Assessment was completed in November 2000. This study is considered a separate, breakout project and has addressed the need to provide a full interchange at this location to better accommodate local travel patterns. The proposed improvements developed as part of the Watkins Mill Road study are compatible with the improvement scenarios along I-270 developed as part of the I-270/US 15 Multi-Modal Corridor Study.



## **7. US 15/MD 26 Interchange**

The US 15/MD 26 interchange was not carried forward for further study as part of the I-270/US 15 Multi-Modal Corridor Study. The interchange was moved from this project to allow the SHA to proceed with a separate project planning study. The existing interchange is located along US 15 at the northern limits of the City of Frederick, south of the proposed Trading Lane interchange (currently an existing intersection), and north of the Opossumtown Pike/Motter Avenue interchange. The study is considered a separate, breakout project and will be examining the need to provide the missing ramp movements to better accommodate local travel patterns. The proposed improvements developed as part of the US 15/MD 26 study would be compatible with the US 15 improvement scenarios developed as part of the I-270/US 15 Multi-Modal Corridor Study.

## **8. High Occupancy/Toll (HOT) Lanes**

The Maryland Department of Transportation (MDOT) has been considering an array of alternatives to ease congestion on our roadways. One alternative under study was the possible conversion of High Occupancy Vehicle (HOV) lanes into High Occupancy/Toll (HOT) lanes.

Important concerns have been raised about the economic impact that such a toll could have on some commuters. MDOT has, therefore, decided not to pursue HOT lanes further, and is continuing to pursue other strategies to ease congestion. These strategies include expanding the capacity of our highway and transit systems, managing travel demand through the use of transit subsidies, encouraging individuals to telecommute, creating HOV lanes for individuals who carpool, providing express bus service, and deploying technology that enables travelers to make better use of the existing transportation system. Over the long term, Maryland's Smart Growth program also will reduce traffic congestion by encouraging better land-use planning.

## **C. ALTERNATES RETAINED FOR DETAILED STUDY**

Consistent with the requirements of the CMS, a full range of multi-modal strategies was identified to be retained for detailed study. Several combinations of transit and highway strategies are being evaluated, including general-purpose lanes, auxiliary lanes, HOV lanes, collector-distributor (C-D) lanes, LRT, BRT, Premium Bus, and others. Specifically the following alternates are under consideration for the I-270/US 15 Multi-Modal Corridor Study:

### **1. Alternate 1: No-Build (Modified Baseline) Alternate**

The No-Build (Modified Baseline) Alternate serves as a basis for comparing all of the other alternatives. It consists of the elements adopted from the 2000 Constrained Long Range Transportation Plan (e.g. MARC commuter train extension from Point of Rocks in Frederick County to the City of Frederick). The No-Build Alternate reflects current and programmed conditions within the I-270/US 15 Corridor. However, the southbound HOV lane between MD 121 and I-370 is excluded since it is part of several alternates under consideration. No major capacity improvements would be made on I-270 or US 15. Only routine maintenance and spot improvements are included.

## **2. Alternate 2: TSM/TDM Alternate**

The proposed TSM/TDM Alternate includes a number of relatively low cost measures meant to improve the overall operation of the existing transportation facilities without major capacity improvements. The proposed TSM measures included in this alternate are as follows:

- Increase and improve existing bus service in the Corridor
- Integrate the bus service improvements with enhanced feeder and distributor service and work with existing providers/programs in the area
- Enhance feeder bus service to Metro and MARC stations
- Provide interactive transit information at major employment centers in the Corridor

The proposed TDM measures included in this alternate are as follows:

- Additional park and ride lot/spaces throughout the corridor. Preliminary concepts were developed at US 15 interchanges with MD 26, Trading Lane, and Biggs Ford Road. The park and ride locations were based on the October 1997 Summary Report from the I-270 Park and Ride Site Identification Study.
- Enhanced rideshare program in the study area, which includes interactive ride matching at major employment centers and implementation of a regionally supported Guaranteed Ride Home (GRH) program. MWCOG currently provides a GRH program for commuters who regularly carpool, vanpool, bike, walk or take transit to work with a reliable ride home when one of life's unexpected emergencies (such as personal crises or unscheduled overtime) arises. This free program is available up to four times per year and operates on weekdays from 6:00 AM to 10:00 PM.
- Comprehensive vanpool program in the study area, which includes financial start-up assistance, increased vanpool eligibility for Metrochek, a consolidated matching database and establishment of a vanpool loaner program.
- Improved pedestrian access to the Shady Grove Metro station and MARC stations
- Completion of specific components of the Metropolitan Washington Council of Governments (MWCOG) Constrained Long Range Plan Bicycle Element, such as constructing specific critical segments of the MWCOG Bicycle Element to provide for a fully linked system in the Corridor.
- Improved regional telecommuting program
- Encouragement of flexible work hours

The estimated costs (2001 dollars) for Alternate 2 are \$33 Million for capital costs (for bus vehicles) and \$28 Million for operations and maintenance costs.

## **3. Alternate 3A: Master Plan HOV/LRT Alternate Alternate 3B: Master Plan HOV/BRT Alternate**

Alternates 3A/B consists of a TSM/TDM component; a highway component with general-purpose, HOV, and C-D lanes, proposed interchanges, and improvements to existing interchanges; and either LRT (3A) or BRT (3B) on the CCT.

a. **Proposed TSM/TDM Component**

The proposed TSM/TDM component is the same as described in Alternate 2.

b. **Proposed Highway Component**

Alternate 3A/B consists of adding general-purpose lanes, HOV lanes, auxiliary lanes and direct access ramps along I-270, and general-purpose and auxiliary lanes along US 15. **Figure II-1** shows the Alternates Retained for Detailed Study, including the proposed highway typical sections. As per the Montgomery County master plans identified in **Chapter I**, only one additional lane is being considered on I-270 between MD 121 and I-70. This additional lane will be evaluated as an HOV lane in Alternate 3A/B. The proposed I-270 section between MD 121 and I-70 would include two general-purpose lanes and one HOV lane in each direction. For safety and HOV enforcement purposes, an inside shoulder width of 14-feet has been included in the design of the proposed alternates. An outside shoulder width of 12-feet has been included in the proposed alternates to allow for a safe refuge area for vehicles. The following describes the highway component from the south (I-370) to the north (Biggs Ford Road) (see engineering plans, sheets **HWY 1 through HWY 15 and MD 75, in Volume 2 of 2, Chapter XI**).

*General-Purpose, HOV and Auxiliary Lane Additions:*

- **I-370 to Middlebrook Road** - Between I-370 and Middlebrook Road, Alternate 3A/B consists of converting the existing I-270 southbound inside general-purpose lane to an HOV lane.
- **Middlebrook Road to Father Hurley Boulevard** - Between Middlebrook Road and Father Hurley Boulevard, the existing southbound inside general-purpose lane would be converted to an HOV lane and an additional general-purpose lane would be added to the outside to replace the converted lane. Between MD 118 and Father Hurley Boulevard, the northbound HOV lane would be converted to a general-purpose lane and a new HOV lane would be added through inside widening.
- **Father Hurley Boulevard to MD 121** - Between Father Hurley Boulevard and MD 121, the northbound HOV lane would be converted to a general-purpose lane; a new HOV lane would be added to the inside in both the northbound and southbound directions; and an additional general-purpose lane would be added through outside widening in both the northbound and southbound directions.
- **MD 121 to MD 85** - Between MD 121 and MD 85, an HOV lane would be added to the inside in both the northbound and southbound directions. In addition, the acceleration and deceleration lanes for both the I-270 northbound and I-270 southbound Weigh Stations have been extended as part of this study.
- **MD 85 to I-70** - Between MD 85 and I-70, an HOV lane would be added to the inside in both the northbound and southbound directions and an auxiliary lane between the interchange acceleration/deceleration ramps would be added to the outside in the southbound direction.
- **I-70 to Jefferson Street/US 15/US 340** - Between I-70 and Jefferson Street, one additional northbound and southbound general-purpose lane would be added through inside widening.





- **Jefferson Street/US 15/US 340 to MD 26** - Between Jefferson Street and MD 26, one general-purpose lane would be added to the inside and one auxiliary lane connecting interchange acceleration/deceleration ramps (not a continuous outside lane) would be added to the outside in both the northbound and southbound directions.
- **MD 26 to Trading Lane** - Between MD 26 and Trading Lane, one general-purpose lane would be added in both the northbound and southbound directions through outside widening.
- **Trading Lane to Biggs Ford Road** - Between Trading Lane and Biggs Ford Road one general-purpose lane would be added in both the northbound and southbound directions through inside widening.

### ***Collector-Distributor Lanes***

Alternates 3A/B consists of extending the I-270 C-D lanes that currently begin at I-370 (southbound) and end at MD 124 (northbound) to Father Hurley Boulevard. C-D lanes are local lanes, parallel to the freeway (referred to as mainline lanes) and separated by a barrier, that carry traffic merging on and off of the freeway. Slip ramps accommodate traffic between the mainline and C-D lanes.

In the northbound direction, the two-lane C-D roadway would be extended from just south of MD 124 to Father Hurley Boulevard. Slip ramps from the mainline lanes to the C-D lanes would be located between MD 124 and Watkins Mill Road (one-lane slip ramp); Middlebrook Road and MD 118 (one-lane slip ramp); and MD 118 and Father Hurley Boulevard (two-lane slip ramp). A one-lane slip ramp from the C-D lanes to the mainline lanes would be located between Middlebrook Road and MD 118. The C-D lanes would join the mainline lanes approximately 3,000 feet north of Father Hurley Boulevard. An auxiliary lane would be located along the C-D lanes between the Watkins Mill Road and Middlebrook Road interchanges. An auxiliary lane would also be located between the slip-ramp from the mainline lanes at Middlebrook Road to the slip ramp from the C-D lanes, approximately 1,600 feet south of MD 118.

In the southbound direction, the two-lane C-D roadway would begin approximately 3,000 feet north of Father Hurley Boulevard and would tie into the existing C-D lanes, approximately 1,100 feet south of I-370. One-lane slip ramps from the mainline lanes to the C-D lanes would be located between Middlebrook Road and Watkins Mill Road and MD 117 and I-370. One-lane slip ramps from the C-D lanes to the mainline lanes would be located between Father Hurley Boulevard and MD 118; MD 118 and Middlebrook Road; and MD 124 and MD 117. An auxiliary lane would be located along the C-D lanes between the Father Hurley Boulevard and MD 118 interchanges; between the Middlebrook Road and Watkins Mill Road interchanges; between the Watkins Mill Road and MD 124 interchanges; and between the MD 117 and I-370 interchanges. An auxiliary lane would also be located between the slip-ramp from the C-D lanes approximately 700 feet north of MD 117 to the slip ramp from the mainline lanes, approximately 2,800 feet south of MD 117.

### ***Direct Access Ramps***

As part of the highway component in Alternate 3A/B, HOV only direct access ramps are being considered at the proposed Newcut Road and Watkins Mill Road interchanges to facilitate movements to the existing and proposed transit stations at COMSAT and Metropolitan Grove, respectively. At the Newcut Road interchange, direct access ramps are located in the median of the freeway to provide access to the interchange directly from the I-270 HOV lane. Direct access ramps at the Watkins Mill Road interchange will be developed based on further federal, state, and local coordination, with a potential option for the direct access ramps located between existing MD 124 and proposed Watkins Mill Road, as an extension of Metropolitan Grove Road.

The direct access ramps being considered would provide on and off access from both directions of the highway via one lane to the center of the interchange bridge. The ramps would only be in operation during the peak periods in the peak direction (i.e. from/to I-270 southbound during the AM peak period and from/to I-270 northbound during the PM peak period). Barricades and variable message signs would indicate when the ramps are not in operation.

Both the proposed HOV lanes and direct access ramps will enhance bus service along I-270 to serve employment and residential areas that are not served by the CCT and Metrorail.

### ***Proposed Interchanges***

Four new interchanges are proposed as part of Alternate 3A/B.

- I-270/Newcut Road - The proposed I-270/Newcut Road interchange would be located in Montgomery County, approximately 1.1 miles south of the MD 121 interchange, as shown on the Clarksburg Master Plan and Hyattstown Special Study Area. The interchange would provide access to/from the east side of I-270 but would not preclude a future extension of Newcut Road west of I-270 to MD 121. In addition, this interchange would include direct access ramps from the HOV lanes to provide on and off access from both directions of the highway via one lane to the center of the interchange bridge. Proposed Newcut Road would intersect with proposed Observation Drive Extended and proposed Gateway Center Drive Extended, approximately 1,500 feet east of I-270 and approximately 1,000 feet north of West Old Baltimore Road. The proposed interchange configuration is a partial cloverleaf/partial diamond interchange with one loop ramp and one outer ramp located in the northwest quadrant, and outer ramps located in the northeast and southeast quadrants.
- I-270/MD 75 Extended - The proposed I-270/MD 75 interchange would be located in Frederick County, approximately 1.2 miles north of the MD 109 interchange in Montgomery County, as identified on the Urbana Region Comprehensive Plan. This interchange would only access the east side of I-270; no connection would be provided to the west in order to be consistent with State/County Smart Growth initiatives and to preserve the agricultural land uses on the west side of I-270. Proposed MD 75 extended (a two-lane roadway) would connect the proposed I-270/MD 75 interchange with MD 355, approximately 100 feet south of the existing MD 355/Lewisdale Road intersection. The alignment would then extend further east to connect with the existing MD

75/Lewisdale Road intersection. The interchange concept is a trumpet interchange, with one loop ramp and one outer ramp located in the northwest quadrant, and outer ramps located in the northeast and southeast quadrants.

- US 15/Trading Lane - A new interchange is proposed at the current at-grade intersection of US 15 and Trading Lane in Frederick County, as shown on the Frederick County Comprehensive Plan. With grade separation of the Trading Lane intersection, the median openings at Trading Lane, Hayward Road/Wormans Mill Road (1,700 feet south of Trading Lane) and Willow Road (3,100 feet north of Trading Lane) will be closed. The median openings are currently channelized, allowing only left turns from US 15 into the cross streets and U-turns on US 15. Traffic desiring to travel south on US 15 from Trading Lane currently must travel north to make a U-turn at the Willow Road median opening. This new interchange, along with closure of the median openings, will improve safety conditions along US 15 in this vicinity by eliminating the U-turns and left turns across a high-speed roadway.

The preliminary Trading Lane interchange configuration is proposed as a standard diamond interchange. To the east, Trading Lane will be widened to a four-lane divided highway to tie into the existing four-lane divided highway at the railroad tracks. To the west, Trading Lane will be extended as a four-lane divided highway to intersect with Thomas Johnson Drive.

- US 15/Biggs Ford Road - A new interchange is proposed at the current at-grade intersection of US 15 and Biggs Ford Road in Frederick County, as shown on the Frederick County Comprehensive Plan. The Frederick County Comprehensive Plan shows Biggs Ford Road being extended to the west of US 15; however, that extension is not included in the preliminary design of this proposed interchange. With grade separation of the Biggs Ford Road intersection, the median openings at Biggs Ford Road and Sundays Lane (1,800 feet north of Biggs Ford Road) will be closed. The median openings are currently channelized, allowing only left turns from US 15 into the cross streets and U-turns. Traffic desiring to travel south on US 15 from Biggs Ford Road currently must travel north to make a U-turn at the Sundays Lane median opening. This new interchange, along with the closure of the median openings, will improve safety conditions along US 15 in this vicinity by eliminating the U-turns and left turns across a high-speed roadway.

The preliminary Biggs Ford Road interchange configuration is proposed as a partial cloverleaf interchange. In the northbound direction, a loop ramp and outer ramp will be located in the southeast quadrant. In the southbound direction, the off-ramp is proposed to connect with a proposed service road which parallels US 15 from Sundays Lane to Biggs Ford Road. The off-ramp will intersect the proposed service road approximately 800 feet north of Biggs Ford Road. The on-ramp will be a standard outer ramp from Biggs Ford Road.

**Note:** The proposed I-270/Watkins Mill Road interchange would be located in Montgomery County, approximately 0.7 mile north of the MD 124 interchange, as shown on the Gaithersburg Master Plan. Watkins Mill Road was initially part of



the I-270/US 15 Multi-Modal Corridor Study but was broken out to be evaluated as a separate project planning study.

### ***Interchange Improvements***

- I-270/MD 117 - The MD 117 interchange will be modified in the southbound direction. The modification will include a loop ramp from southbound I-270 to eastbound MD 117 in the southwest quadrant. This additional ramp is proposed to supplement the left turn movement from southbound I-270 to eastbound MD 124. In order to accommodate this proposed southbound loop ramp, the existing MD 117 to southbound I-270 ramp in the southwest quadrant will need to be shifted to the west. Separate design studies are currently underway, which include widening MD 117 from the I-270 interchange to Muddy Branch Road, and the construction of a park and ride lot in the northeast quadrant loop ramp. In addition, this existing loop ramp from northbound I-270 to westbound MD 117 will be modified to provide connections to both eastbound and westbound MD 117 at a new signalized intersection. This modification, independent of the I-270/US 15 project, will provide the missing eastbound movement to Olde Towne Gaithersburg.
- I-270/Middlebrook Road - The Middlebrook Road interchange includes two potential modifications in the southbound direction. The first modification consists of adding one lane to the Middlebrook Road to southbound I-270 ramp in the southwest quadrant (creating a two-lane ramp). An alternative modification consists of providing a westbound Middlebrook Road to southbound I-270 loop ramp in the northwest quadrant.
- I-270/MD 118 - The MD 118 interchange will be modified to include an additional lane on the ramp from eastbound MD 118 to southbound I-270 in the southwest quadrant (creating a two-lane ramp). In addition, the outer lane on the MD 118 ramp to northbound I-270 will be extended to the off-ramp to Father Hurley Boulevard.
- I-270/Father Hurley Boulevard - The Father Hurley Boulevard interchange will be modified to include an additional lane on the ramp from northbound I-270 to Father Hurley Boulevard in the southeast quadrant (creating a two-lane ramp).
- I-270/MD 121 - The MD 121 interchange includes slight improvements to the outer ramp from I-270 northbound to MD 121. The purpose of this geometric improvement is to remove the existing sharp curve on the ramp in order to provide for a safer design speed when exiting the highway.
- I-270/MD 109 - The MD 109 interchange modifications consist of full or partial closure of the interchange; however, no improvements may also be considered as an option. The full or partial closure of the MD 109 interchange would occur only in conjunction with the proposed MD 75 extended interchange.
- I-270/MD 80 - The MD 80 interchange includes one potential modification scenario. The scenario assumes a northbound I-270 to eastbound MD 80 ramp in the southeast quadrant as part of a separate Interstate Access Point Approval design effort. In addition, the scenario consists of improving the tight radius of the MD 80 to northbound I-270 ramp in the northeast quadrant and the tight radius of the MD 80 to southbound I-270 ramp in the

southwest quadrant in order to improve safety conditions and increase design speed. In addition, a new southbound I-270 to eastbound MD 80 ramp is proposed in order to improve the level of service on the southbound ramp terminal. This ramp would eliminate the left turns required off the existing loop ramp. The southbound I-270 to eastbound MD 80 ramp intersects with MD 80 directly across from the Thurston Road/MD 80 intersection approximately 800 feet west of the southbound I-270 ramp terminal.

- I-270/MD 85 - The MD 85 interchange will be modified in the northbound direction to include a collector-distributor road to eliminate the weave between traffic from MD 85 destined to northbound I-270 and northbound I-270 traffic destined to I-70. Approximately 0.6 mile south of the MD 85 interchange, a three-lane barrier separated C-D roadway will split from the I-270 mainline for traffic destined to the MD 85 and I-70 interchanges. Approximately 1,000 feet south of the MD 85 interchange, this C-D roadway will separate into a two-lane C-D roadway to I-70 and a two-lane exit ramp to MD 85. The C-D roadway to I-70 will cross MD 85 on a new structure parallel to mainline I-270. The MD 85 exit ramp will consist of a westbound MD 85 double left-turn lane, which will intersect with MD 85 between the I-70 C-D roadway and the I-270 mainline; and an eastbound MD 85 lane, which will tie into MD 85 at the existing northbound I-270 ramp terminal. The existing loop ramp from northbound I-270 to westbound MD 85 will be removed. MD 85 traffic destined to I-70 will access the C-D roadway at the current northbound I-270/MD 85 ramp terminal intersection. MD 85 traffic destined to I-270 northbound will access the highway via a new ramp, which will be constructed between mainline I-270 and the I-70 C-D roadway.
- Jefferson Street/US 15/US 340 - The Jefferson Street interchange potential modification scenario consists of adding a one-lane flyover ramp from the median of eastbound Jefferson Street to the median of northbound US 15. As part of a separate SHA design effort, the following improvements are being considered:
  - In the southeast quadrant, a left-turn ramp from northbound US 40 to westbound Jefferson Street and an eastbound Jefferson Street to northbound US 15 loop ramp will be added.
  - In the northeast quadrant, the existing northbound US 40 to westbound US 15/US 340 loop ramp will be removed.
  - In the northwest quadrant, a left-turn movement from southbound US 15 to eastbound Jefferson Street will be added to replace the southwest quadrant loop ramp, which will be removed.
- US 15/MD 26 - The MD 26 interchange improvements were initially a part of the I-270/US 15 Multi-Modal Corridor Study but have since been broken out as part of a separate planning study. The proposed improvements to this interchange include providing the missing ramp movements to and from south and west of this interchange, as well as a potential extension of MD 26 to Thomas Johnson Drive. As part of the I-270/US 15 Multi-Modal Corridor Study both a standard diamond and an urban diamond

interchange were developed; however, additional interchange concepts will be evaluated as part of the separate study.

### ***Park and Ride Lots***

Three park and ride lots are being considered as part of the proposed alternates:

- northeast quadrant of the US 15/MD 26 proposed interchange (as shown on the engineering plans, sheet **HWY 14, in Volume 2 of 2, Chapter XI**).
- northwest quadrant of the US 15/Trading Lane proposed interchange (as shown on the engineering plans, sheet **HWY 14, in Volume 2 of 2, Chapter XI**).
- northwest quadrant of the US 15/Biggs Ford Road interchange (as shown on the engineering plans, sheet **HWY 15, in Volume 2 of 2, Chapter XI**).

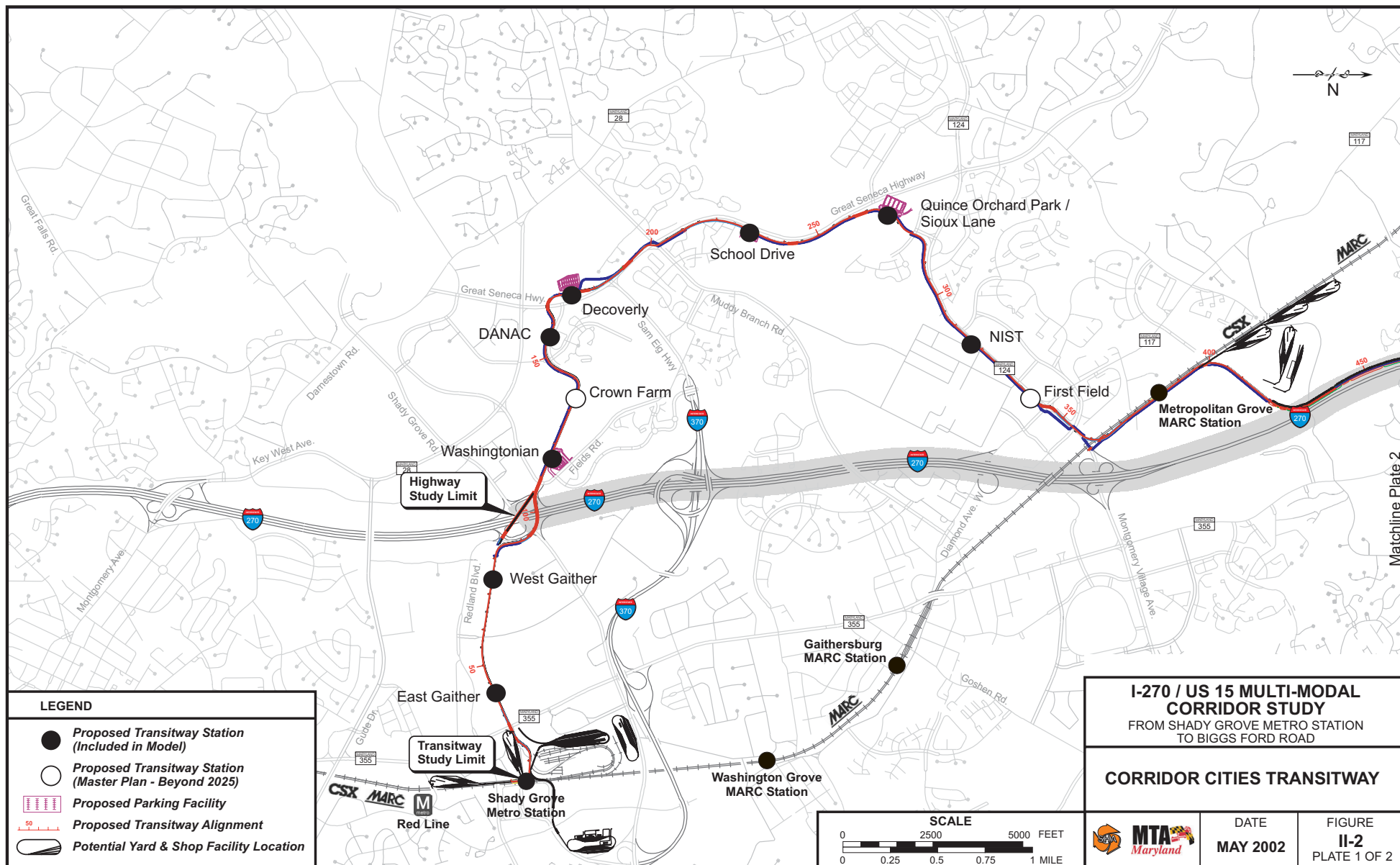
### **c. Proposed Transit Component**

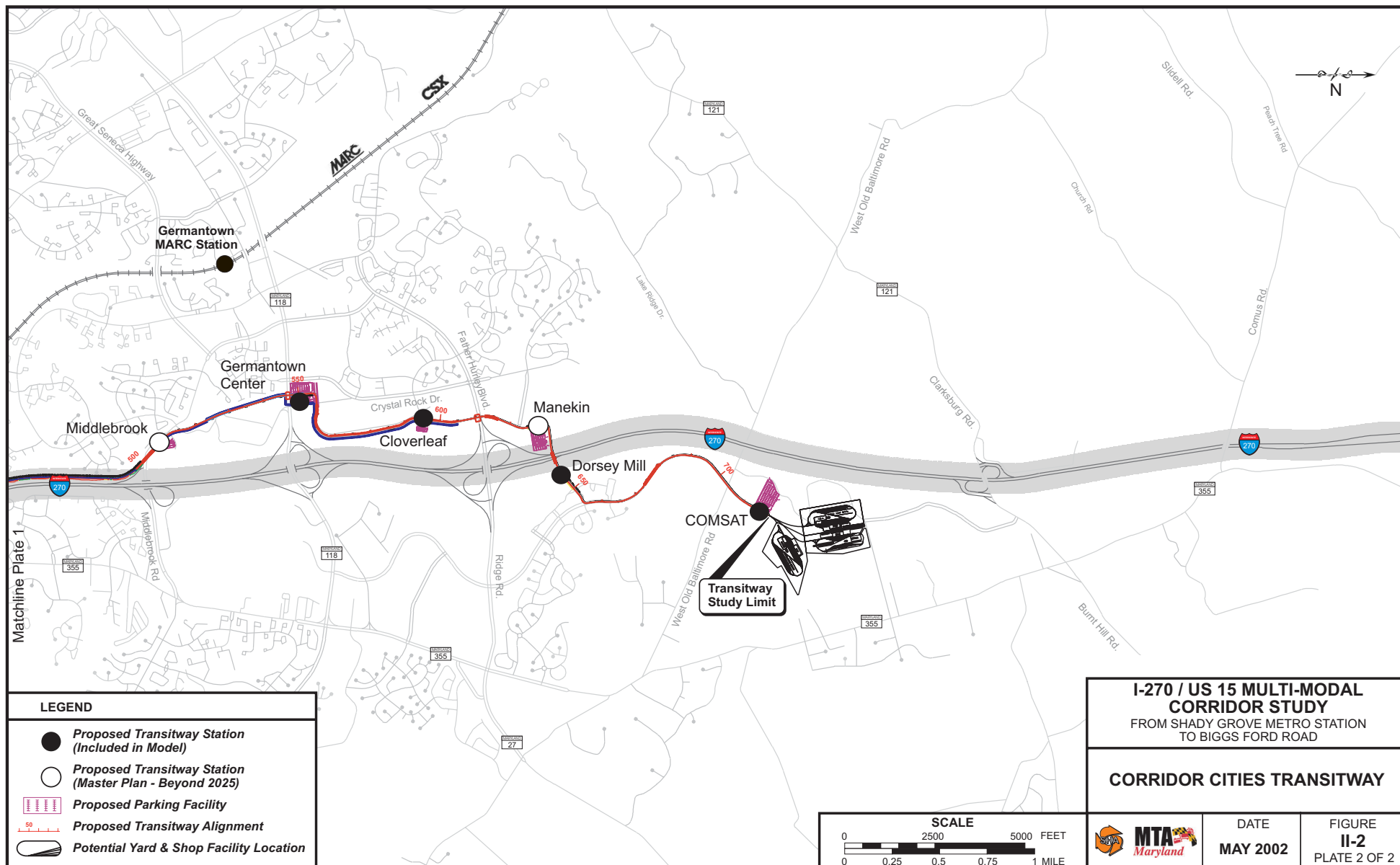
The proposed transit component is featured as an element of I-270 Corridor improvements. The transit component consists of two options. Alternate 3A includes LRT and a hiker/biker trail along a separate right-of-way, known as the CCT. Alternate 3B includes BRT and a hiker/biker trail along the CCT (see engineering plans, sheets **TRAN 1 through TRAN 6, in Volume 2 of 2, Chapter XI**).

### ***Corridor Cities Transitway***

The CCT is a proposed transit alignment within the I-270 Corridor. It is approximately 13.5 miles in length and generally runs northwest beginning at the existing Shady Grove Metro Station and ending at the COMSAT facility, south of Clarksburg, though in the future it may be extended to Frederick. **Figure II-2** shows the proposed CCT alignment and the locations of the 18 proposed stations. The proposed CCT alignment begins at the Shady Grove Metro Station and heads west across MD 355 and parallel to Redland Road before crossing I-270 at the Shady Grove Road interchange. It continues west across Omega Drive and through Decoverly Industrial Park and turns to the northwest upon reaching Great Seneca Highway. The CCT follows along the west side of Great Seneca Highway until it reaches Muddy Branch Road, where it crosses to the east side, either at-grade (Option 1) or above grade (Option 2). Prior to the Great Seneca Highway/Quince Orchard Road intersection, the alignment turns to the north to go through Quince Orchard Park. It then continues north along Quince Orchard Road to the existing CSX rail line where it turns to the northwest.

The alignment parallels the CSX tracks to a point just beyond the Metropolitan Grove MARC station and then heads north again until it reaches I-270. It runs parallel to the west side of I-270 until it reaches Middlebrook Road, where it curves slightly more to the west to serve the Middlebrook Tech Park and the Department of Energy. The CCT continues in this direction crossing MD 118 (Germantown Road) before making a sharp turn to the northeast along Century Boulevard. Running in the median of Century Boulevard, the alignment turns sharply back to the northwest and continues across MD 27 (Father Hurley Boulevard) before again turning sharply to the east and crosses I-270 to run in the median of Observation Drive. The CCT remains in the





median of Observation Drive, which turns back to the northwest, and continues until it reaches its terminus at the existing COMSAT facility. This proposed Master Plan alignment serves those areas identified and approved by Montgomery County and result in a number of sharp turns along the alignment, as described above. The sharp turns are required for the following reasons:

- reduce right-of-way impacts and displacements;
- accommodate existing and proposed/approved developments;
- prevent interference with intersection traffic flow and maintain continuous traffic movements;
- provide for a safe, pedestrian friendly environment.

**Table II-2** provides additional detail for each of the proposed transit stations. As indicated in the table, all proposed stations are to be at grade regardless of the technology selected, except for First Field Station. Based on the vertical geometrics of the CCT alignment, an at-grade station would preclude LRT because of grade restrictions, however, BRT could be accommodated (Option 1). An above-grade/elevated station can accommodate either BRT or LRT technology (Option 2).

**TABLE II-2  
PRELIMINARY TRANSITWAY STATIONS**

| <b>Station Name <sup>1</sup> (Approximate Mileage Along CCT Alignment)</b>          | <b>Timeframe</b>          | <b>Access</b>                                      | <b>Proposed Master Plan Spaces <sup>2</sup></b> |
|---|---------------------------|--|---|
| Shady Grove (0.0)   | 2025<br>Included in Model | Park and Ride/Bus                                  | 7,800 spaces by 2010 (Metro parking)            |
| East Gaither (King Farm) (0.6±)   | 2025<br>Included in Model | Initially walk only; Master Plan Park and Ride/Bus | 100 spaces<br>4 bus berths                      |
| West Gaither (King Farm) (1.2±)   | 2025<br>Included in Model | Initially walk only; Master Plan Park and Ride/Bus | 100 spaces<br>4 bus berths                      |
| Washingtonian (2.1±)  | 2025<br>Included in Model | Park and Ride/Bus                                  | 250 spaces<br>4 – 6 bus berths                  |
| Crown Farm (2.3±)   | Master Plan (beyond 2025) | Park and Ride/Bus                                  | To be determined                                |
| DANAC (2.8±)  | 2025<br>Included in Model | Walk Only  | 0 spaces  |
| Decoverly (3.1±)  | 2025<br>Included in Model | Park and Ride/Bus                                  | 250 spaces<br>4 – 6 bus berths                  |
| School Drive (4.2±)   | 2025<br>Included in Model | Walk Only  | 0 spaces<br>4 – 6 bus berths                    |
| Quince Orchard (4.9±)   | 2025<br>Included in Model | Park and Ride/Bus                                  | 500 spaces<br>Structured<br>4- 6 bus berths     |
| NIST (5.8±)   | 2025<br>Included in Model | Walk Only/Bus                                      | 0 spaces<br>Bus Turnouts                        |
| First Field (6.5±)<br>Option 1: At-grade - BRT only<br>Option 2: Elevated - LRT/BRT | Master Plan (beyond 2025) | Walk Only  | 0 spaces  |

**TABLE II-2 (CONTINUED)**  
**PRELIMINARY TRANSITWAY STATIONS**

| Station Name <sup>1</sup> (Approximate Mileage Along CCT Alignment) | Timeframe                    | Access            | Proposed Master Plan Spaces <sup>2</sup>  |
|---|------------------------------|-------------------|---|
| Metropolitan Grove (7.1±)   | 2025<br>Included in Model    | Park and Ride/Bus | <u>1<sup>st</sup> Study</u><br>700 spaces<br>5 bus berths<br><u>2<sup>nd</sup> Study</u><br>1,000 spaces (north side)<br>350 spaces (south side)<br>8 bus berths<br>30 kiss 'n ride |
| Middlebrook (9.4±)  | Master Plan<br>(beyond 2025) | Park and Ride/Bus | 50 spaces<br>2 bus berths<br>8 kiss 'n ride   |
| Germantown Center (10.3±)   | 2025<br>Included in Model    | Park and Ride/Bus | 600 spaces<br>9 bus berths<br>20 kiss 'n ride   |
| Cloverleaf (10.9±)  | 2025<br>Included in Model    | Walk Access/Bus   | 50 spaces<br>2 bus berths<br>10 kiss 'n ride  |
| Manekin (11.7±)   | Master Plan (beyond 2025)    | Park and Ride/Bus | 500 spaces<br>2 bus berths<br>10 kiss 'n ride   |
| Dorsey Mill (12.1±)   | 2025<br>Included in Model    | Park and Ride/Bus | 500 spaces<br>4 bus berths<br>10 kiss 'n ride   |
| COMSAT (13.5±)  | 2025<br>Included in Model    | Park and Ride/Bus | 1,000 spaces<br>4 bus berths<br>30 kiss 'n ride   |

*Notes:*

1. All stations are at-grade unless otherwise noted. (refer to Section II.C.3.c)
2. Preliminary park and ride facilities are subject to change; to be integrated with future land use.

### ***Alternate 3A: Light Rail Transit on the CCT***

Alternate 3A includes a double-tracked LRT system along the CCT. Track centers would be spaced approximately 14 feet apart and the overall width of the typical section would generally range between 50 and 75 feet. This right-of-way would also include the overhead catenary system used to power the light rail vehicles. The placement of the catenary poles could be between the two tracks or to the outside of each track. For study purposes, MTA light rail vehicle design specifications, such as those used for Baltimore Central Light Rail Line, were used.

Implementing LRT along the CCT would require a rail yard associated with maintenance and storage of track and vehicles. The 2025 ridership projections indicate that this facility must accommodate approximately 50 light rail vehicles. Three locations are currently being

considered for the rail yard - Shady Grove Metro Station area, Metropolitan Grove area, and the COMSAT area.

A number of bikeway and equestrian trails exist or are planned in the I-270/US 15 Corridor. Bikeways and trail resources provide a travel alternate to the automobile and complement the recreational aspects of park resources. The *Montgomery County Master Plan of Bikeways* (1980; currently being revised) contains recommendations for future bikeway routes. The *Gaithersburg Master Plan* (1990) indicates that continued use and enjoyment of the equestrian trails is being threatened by development. The Plan recommends that an attempt be made to accommodate these trails as development occurs. The *City of Frederick Comprehensive Plan* (1995) indicates that the City will prepare a Bikeway Plan to address short and long-range needs and implementation issues.

Bicycle and pedestrian access, as called for in the county's master plans will be provided along the transitway alignment, which will increase the transportation options available in the area.

### ***Alternate 3B: Bus Rapid Transit on the CCT***

Alternate 3B includes BRT along the CCT. BRT uses buses to emulate the speed, reliability, and image of light rail. Bus service will operate in two general formats: (1) line haul along the CCT; and, (2) smaller feeder buses which circulate through neighborhoods before using the busway. The buses themselves can be more modern in appearance, offering a more "rail-like" image. To enhance boarding and alighting, the buses can be low floor, with multiple doors. Fare collection can be barrier free and "pre-paid," similar to light rail operations. The CCT would be a paved roadway used exclusively by buses. The roadway would be constructed with one 12-foot lane in each direction, however, passing lanes would be provided at stations. The overall width of the typical section would range from 45 to 70 feet. Service on the BRT facility would be augmented by express bus service to the Shady Grove Metro Station using the I-270 HOV lanes.

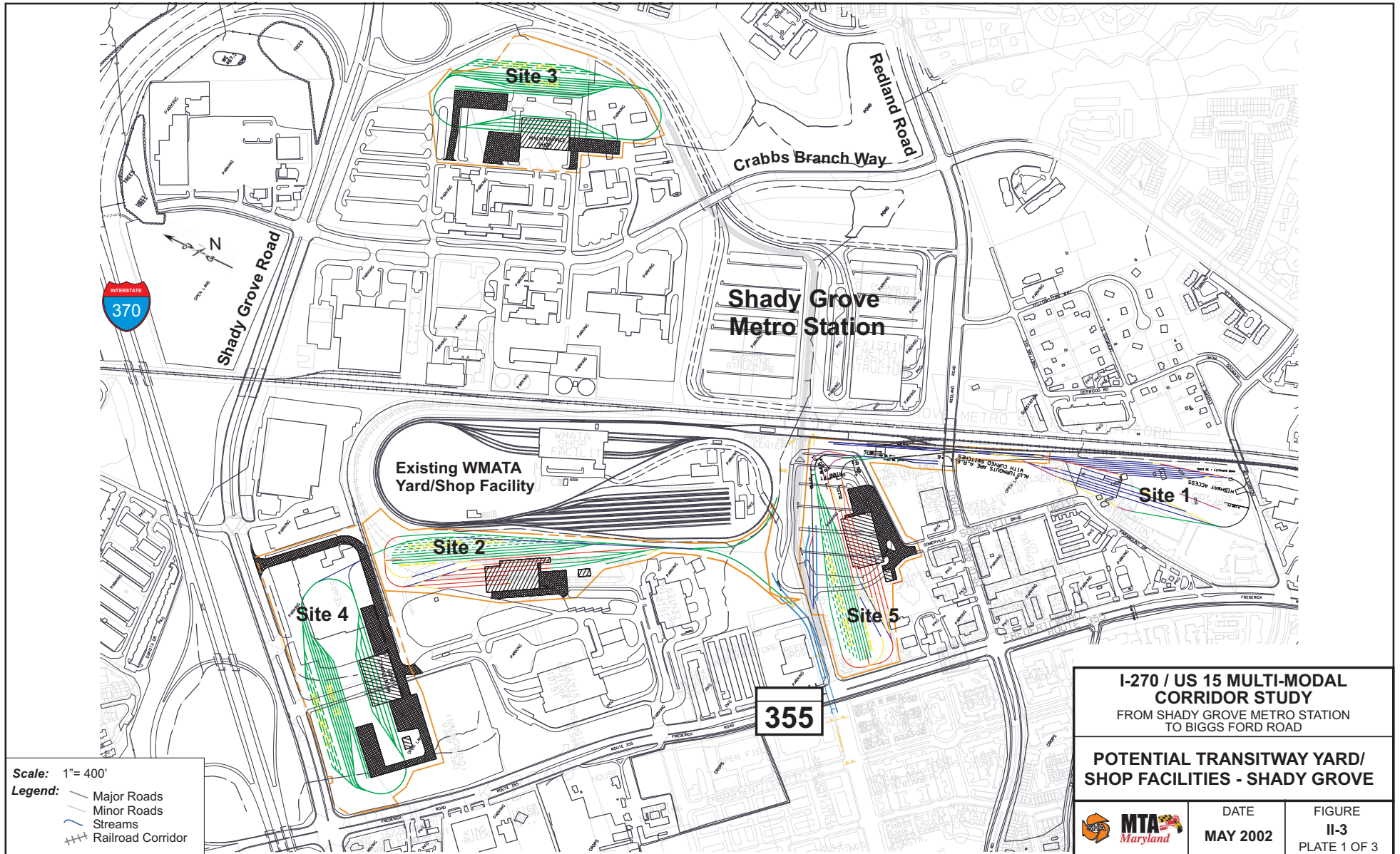
The BRT alignment (Alternate 3B) also includes a hiker/biker trail such as that described in Alternate 3A above.

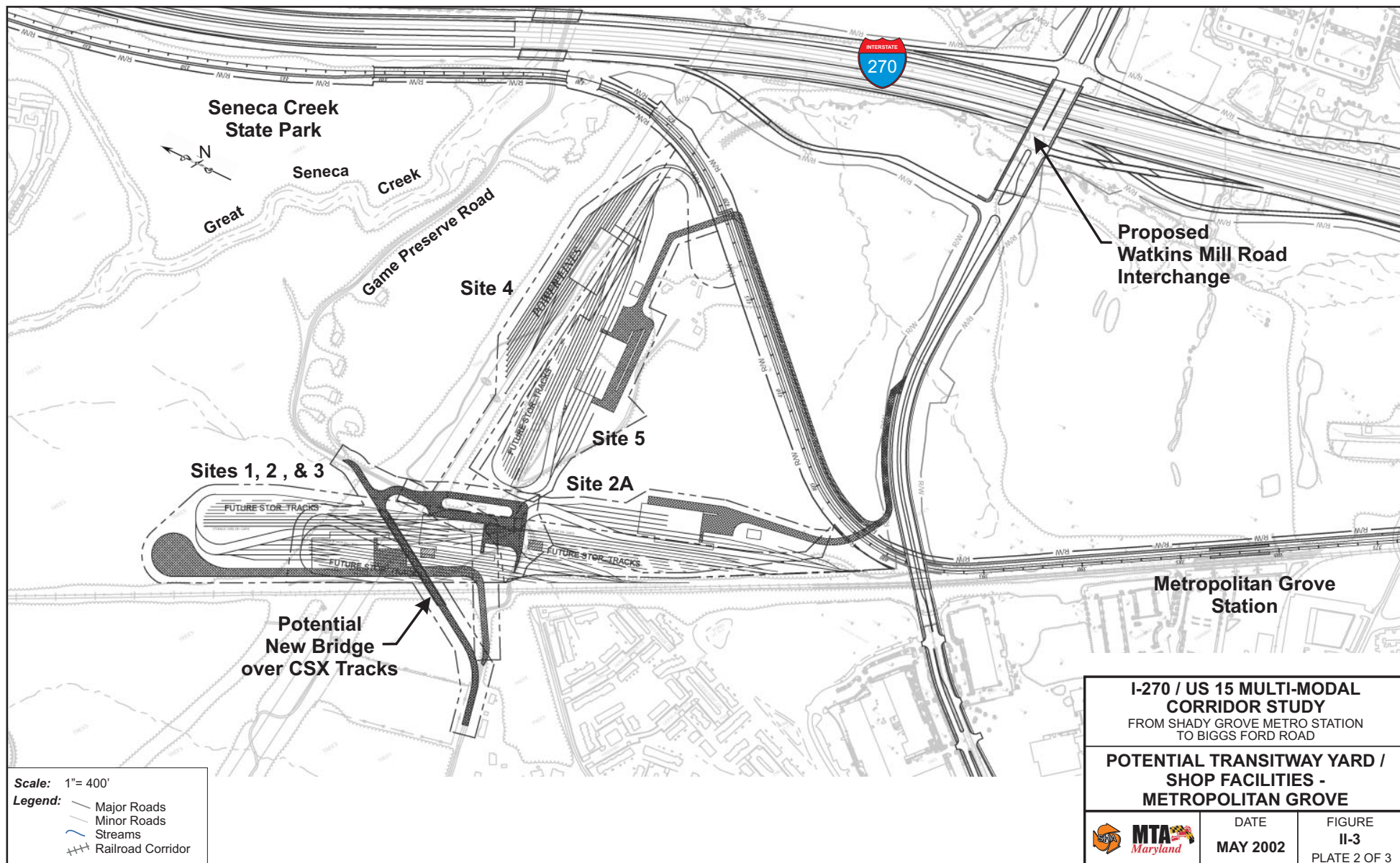
#### **d. Transitway Yard/Shop Facilities**

Along the I-270/US 15 Multi-Modal Corridor, the project team evaluated three distinct areas, with various site options, to determine the potential for constructing a transitway yard/shop facility. A yard/shop facility provides storage and maintenance facilities where transit vehicles are inspected, repaired, cleaned and stored. The yard/shop facility locations that have been evaluated could be used for either the LRT or BRT alternate. However, additional storage capacity may be required for the BRT facility, which may result in increased right of way requirements or additional sites to be evaluated. Based on the operations, a single facility is adequate for initial operations from Shady Grove to COMSAT but a storage/tail track will be needed to improve internal operation and reduce the deadhead travel times for the LRT alternate.

**Figure II-3** indicates the three areas that were investigated: Shady Grove, Metropolitan Grove, and COMSAT. Moreover, these locations are consistent with the master plans for the area,











although some sites have been altered to accommodate environmental and engineering conditions and/or development, as needed. The increased development patterns for the communities are incorporating the transit alignment in their plans. Although 15 site configuration options are being analyzed, only one of them (potentially) would be selected as the yard/shop facility for this phase of the project. Another site will probably be needed in the future – north of COMSAT in support of extending the transitway into Frederick County. These locations will have the capacity to store approximately 50 vehicles immediately with some site options having capacity for expansion (approximately 5 to 10 additional vehicles) in the future. All configurations noted below have room for expansion within the current proposed right-of-way except the two sites with the stub-in configuration (Site #4 at Shady Grove and Site #5 at Metropolitan Grove) that have limited capacity for expansion.

### ***Shady Grove Area Sites***

There are five sites located within the Shady Grove Metro Station area and four of them have been retained for further study by the project team. The Shady Grove sites are located at the northern terminus of the existing Metro red line. This area was selected for further examination, as it would be the starting point for the proposed CCT alignment.

#### **Site 1 – Vicinity of Indianola Drive and CSX/Metro Railroad Tracks - Retained for Additional Study**

This site has been retained for detailed study and is located adjacent to the southbound CSX/Metro railroad tracks at the Shady Grove Metro Station and, with new track construction, will offer direct track connection between the proposed transitway yard/shop facility and existing revenue service trips. The track extension would begin at the existing Metro station and continue across Redland Road and Paramount Drive, travel parallel to Somerville Drive before the facility boundary ends at Indianola Drive.

#### **Site 2 – Adjacent to existing WMATA Shady Grove Yard/Shop Facility – Eliminated from Further Consideration**

The second site is located between the existing WMATA Shady Grove yard/shop facility and the Montgomery County Waste Transfer Station. Despite this site being located within an industrial park setting, the project team decided to eliminate it from further consideration based on the substantial impacts to the Montgomery County Waste Transfer Facility.

#### **Site 3 – Vicinity Shady Grove Road and Crabbs Branch Way (behind buildings) - Retained for Additional Study**

The third site in the Shady Grove area that has been retained for further evaluation by the project team is located near the Shady Grove Road and Crabbs Branch Way intersection – between WMATA parking facilities and behind the Montgomery County administration buildings (Department of Parks, Transfer and Facility Maintenance and public school bus parking area).

Site 4 - Intersection of Shady Grove and Frederick Roads – Eliminated from Further Consideration

This site is located adjacent to Site 2 and the existing WMATA yard/shop facility, at the intersection of Shady Grove and Frederick roads. It was eliminated from consideration because all vehicles entering and exiting the facility would be required to cross the railroad tracks. Across Frederick Road from this location is Shady Grove Plaza that houses an office building, Comfort Inn hotel, gas station and car dealership.

Site 5 – Intersection of Frederick Road and King Farm Blvd – Retained for Additional Study

This site is located on existing WMATA property at Frederick Road, across from King Farm Boulevard and has been retained for detailed study. The M-NCPPC has expressed concern regarding the location of this site as they have long term plans to target this area for high-density, mixed-use development. They would like to see access to the Shady Grove Metro Station from the King Farm development (currently no access exists) via this proposed development.

***Metropolitan Grove Area Sites***

There are six sites in the Metropolitan Grove area that are under consideration for location of the new transitway yard/shop facility. Overall, this area is situated in the middle of the proposed alignment that spans from Shady Grove to COMSAT. This location provides less deadheading movements since it is located in the middle of the alignment. Additionally, the Metropolitan Grove location provides a logical terminus for first stage construction and operation of the transitway alignment.

Sites 1, 2 and 3 – Game Preserve Road and Existing CSX Railroad Tracks – Eliminated from Further Consideration

These three sites although different configurations, are intermingled and located near the existing CSX railroad tracks near the Game Preserve Road and Seneca Creek State Park intersection. As you travel west on Game Preserve Road, one side is residential while the other is Seneca Creek State Park where PEPCO transmission towers and lines are located. The proposed disturbances to parkland resources (reforestation would probably be needed) and the relocation of utilities would be extensive in the area. Based on the existing and proposed conditions, the project team eliminated these sites from further consideration.

Site 2A – North of CSX Railroad Tracks and Game Preserve Road – Retained for Additional Study

Site 2A is located adjacent to the CSX railroad tracks just east of Game Preserve Road. It is situated inside the town limits of the City of Gaithersburg and has been retained for further study. This site has been retained because it has minimal impacts to the transmission lines and towers and is situated near the proposed transit alignment.

Site 4 – Under PEPCO Transmission Lines, East of Game Preserve Road – Retained for Additional Study

This site is has been retained for detailed study although it is located on hilly terrain under existing PEPCO transmission lines near the I-270 and Game Preserve Road intersection.

Site 5 – Adjacent to PEPCO Transmission Lines, South of the CSX Railroad Tracks – Retained for Additional Study

Site 5 is adjacent to site 4 and situated south of sites 1, 2 and 3 near existing I-270 and has been retained for detailed study.

***COMSAT Area Sites***

Initially, three sites were presented at the February 2001 Informational Public Meeting however, since then, two of these sites have been eliminated and a fourth site has been identified. All four of these sites are situated on the COMSAT property near Shawnee Lane. Although staging the transitway alignment, thereby constructing southern portions first (due to cost considerations) appears likely, preliminary assessment of sites at this location have been retained to provide a comprehensive listing of potential candidates.

Site 1 – East Side of Shawnee Lane – Eliminated from Further Consideration

This site was eliminated from further consideration because of substantial agricultural and business impacts and impacts to Little Seneca Creek tributary and stream valley.

Site 2 – Gateway Center Drive and Shawnee Lane – Retained for Additional Study

This site is located at the intersection of Gateway Center Drive and Shawnee Lane and has been retained for detailed study. Currently, this land appears to be vacant of existing structures although a wooded area would be affected.

Site 3 – COMSAT Drive and Gateway Center Drive – Eliminated from Further Consideration

This site was eliminated from further consideration because of substantial agricultural and business impacts and direct impacts to COMSAT parking, buildings/trailers, satellite dishes and a pond.

Site 4 – Northeast Side of Shawnee Lane – Retained for Additional Study

This site is located off of Shawnee Lane and traverses a portion of Sites 1 and 2. Building structures, parking and some wooded areas would be directly affected if this site is selected for the transitway yard/shop facility.

**e. Costs**

**Table II-3** indicates the costs for Alternates 3A Master Plan HOV/LRT Alternate and Alternate 3B Master Plan HOV/BRT Alternate.

**TABLE II-3**  
**ALTERNATES 3A/B CAPITAL COSTS (\$ MILLIONS OF 2001 DOLLARS)**

| <b>Cost Component</b>                         | <b>Alternate 3A</b> | <b>Alternate 3B</b> |
|---|---------------------|---------------------|
| <i>Highway Capital Costs (\$ in millions)</i> |                     |                     |
| Project Planning                              | \$9                 | \$9                 |
| Preliminary Engineering                       | \$216               | \$216               |
| Right-of-Way                                  | \$139               | \$139               |
| Construction                                  | \$1,441             | \$1,441             |
| Subtotal Highway                              | \$1,805             | \$1,805             |
| <i>Transit Capital Costs (\$ in millions)</i> |                     |                     |
| Subtotal Transit                              | \$857               | \$792               |
| Total Cost of Alternate                       | \$2,662             | \$2,597             |

*Note:* Based on the Maryland Department of Transportation's 2003 to 2008 Consolidated Transportation Program cost estimate.

The estimated annual transit operations and maintenance costs (2001 dollars) for Alternates 3A/B are as follows:

- Alternate 3A (LRT)     \$25 Million
- Alternate 3B (BRT)     \$64 Million

**4.     Alternate 4A: Master Plan General-Purpose/LRT Alternate**  
**Alternate 4B: Master Plan General-Purpose/BRT Alternate**

Alternates 4A/B consist of a TSM/TDM component; a highway component with general-purpose, HOV, and collector-distributor lanes; proposed interchanges and improvements to existing interchanges; and either LRT (4A) or BRT (4B) on the CCT.

**a.     Proposed TSM/TDM Component**

The proposed TSM/TDM component is the same as described in Alternate 2.

**b.     Proposed Highway Component**

The proposed highway component is the same as described in Alternate 3A/B except along I-270 between MD 121 and I-70 (see engineering plans, sheets **HWY 1 through HWY 15 and MD 75 in Volume 2 of 2, Chapter XI**). Along this section of I-270, one general-purpose lane per direction would be added in place of the HOV lane described in Alternate 3A/B. (The proposed I-270 section between MD 121 and I-70 consists of three general-purpose lanes in each direction). Between MD 121 and I-70, Alternate 4A/B is as follows:

- **MD 121 to MD 85** - Between MD 121 and MD 85, a general-purpose lane would be added to the inside in both the northbound and southbound directions.
- **MD 85 to I-70** - Between MD 85 and I-70, a general-purpose lane would be added to the inside in both the northbound and southbound directions and an auxiliary lane between the interchange acceleration/deceleration ramps would be added to the outside in the southbound direction.

**c. Proposed Transit Component**

The proposed transit component for Alternates 4A and 4B are the same as the transit component described in Alternates 3A and 3B (see engineering plans, sheets **TRAN 1 through TRAN 6, in Volume 2 of 2, Chapter XI**).

**d. Transitway Yard/Shop Facilities**

The proposed transitway yard/shop facilities for Alternates 4A and 4B are the same as described in Alternates 3A and 3B.

**e. Costs**

**Table II-4** indicates the costs for Alternate 4A Master Plan General-Purpose/LRT Alternate and Alternate 4B Master Plan General-Purpose/BRT Alternate:

**TABLE II-4  
ALTERNATES 4A/B CAPITAL COSTS (\$ MILLIONS OF 2001 DOLLARS)**

| <b>Cost Component</b>                         | <b>Alternate 4A</b> | <b>Alternate 4B</b> |
|---|---------------------|---------------------|
| <i>Highway Capital Costs (\$ in millions)</i> |                     |                     |
| Project Planning                              | \$9                 | \$9                 |
| Preliminary Engineering                       | \$216               | \$216               |
| Right-of-Way                                  | \$139               | \$139               |
| Construction                                  | \$1,441             | \$1,441             |
| Subtotal Highway                              | \$1,805             | \$1,805             |
| <i>Transit Capital Costs (\$ in millions)</i> |                     |                     |
| Subtotal Transit                              | \$857               | \$792               |
| Total Cost of Alternate                       | \$2,662             | \$2,597             |

**Note:** Based on the Maryland Department of Transportation's 2003 to 2008 Consolidated Transportation Program cost estimate.

The estimated annual transit operations and maintenance costs (2001 dollars) for Alternates 4A/B are as follows:

- Alternate 4A (LRT) \$25 Million
- Alternate 4B (BRT) \$64 Million

**5. Alternate 5A: Enhanced Master Plan HOV/General-Purpose/LRT  
Alternate 5B: Enhanced Master Plan HOV/General-Purpose/BRT  
Alternate 5C: Enhanced Master Plan HOV/General-Purpose/Premium Bus**

Alternates 5A/B/C consist of a TSM/TDM component; a highway component with general-purpose, HOV, and collector-distributor lanes; proposed interchanges, improvements to existing interchanges; and either LRT (5A) or BRT (5B) on the CCT alignment or Premium Bus on the HOV Lanes (5C). This alternate is referred to as enhanced as it includes one additional general-purpose lane in each direction along I-270 between MD 121 and the County line, beyond that which is proposed in the Montgomery County Master Plans.



a. **Proposed TSM/TDM Component**

The proposed TSM/TDM component is the same as described in Alternate 2.

b. **Proposed Highway Component**

*General-Purpose, HOV and Auxiliary Lane Additions*

The proposed highway component is the same as described in Alternate 3A/B except along I-270 between MD 121 and I-70 (see engineering plans, sheets **HWY 1 through HWY 15 and MD 75, in Volume 2 of 2, Chapter XI**). Along this section of I-270, one general-purpose lane per direction would be added in addition to the HOV lanes described in Alternate 3A/B. (The proposed I-270 section between MD 121 and I-70 consists of three general-purpose lanes and one HOV lane in each direction.) Between MD 121 and I-70, Alternate 5A/B/C is as follows:

- **MD 121 to MD 85** - Between MD 121 and MD 85, an HOV lane would be added to the inside and one general-purpose lane would be added to the outside in both the northbound and southbound directions.
- **MD 85 to I-70** - Between MD 85 and I-70, an HOV lane would be added to the inside in both the northbound and southbound directions and one additional general-purpose lane and one auxiliary lane between the interchange acceleration/deceleration ramps would be added to the outside in the southbound direction.

In addition, as part of Alternate 5A/B/C, HOV lanes are being considered.

c. **Proposed Transit Component**

The proposed transit component of Alternate 5A/B/C consists of three alternatives. Alternates 5A and 5B are the same as Alternates 3A and 3B (see engineering plans, sheets **TRAN 1 through TRAN 6 in Volume 2 of 2, Chapter XI**). Alternate 5C, proposes not building the CCT and, instead, implementing premium bus service on proposed HOV lanes.

*Alternate 5C – Premium Bus on HOV Lanes*

**Highway** - The highway component of Alternate 5C is the same as described in Alternate 5A/B, with the exception of the locations for direct access ramps and the general-purpose, HOV and auxiliary lane additions description between MD 121 and I-70.

**Direct Access Ramps** - In addition to the direct access ramps at the proposed Watkins Mill Road interchange and the proposed Newcut Road interchanges, direct access ramps are being considered at the I-370, MD 118, and MD 85 (Shockley Drive) interchanges.

The direct access ramps proposed at MD 85 would be located at the proposed Shockley Drive overpass, designated as a local roadway as per the Draft Frederick County Master Plan and part of a separate planning study. Direct access ramps would be located in the median of the freeway to provide access to the interchange directly from the HOV lane. With the exception of the ramps at I-370 and MD 85 (Shockley Drive), the direct access ramps being considered would

provide on and off access from both directions of the highway. The direct access ramps at I-370 would only provide access to/from the north. The direct access ramps at MD 85 (Shockley Drive) would only provide access to/from the south. The ramps would provide access via one lane to the center of the interchange bridge except for I-370 where the ramps would provide access directly to the HOV lanes on I-370. The ramps would only be in operation during the peak period in the peak direction (i.e. to/from I-270 southbound during the AM peak period and to/from I-270 northbound during the PM peak period). Barricades and variable message signs would indicate when the ramps are in operation. These direct access ramps would service high occupancy vehicles and buses to access the Shady Grove Metro Station (via I-370), Metropolitan Grove MARC Station (via Watkins Mill Road), Germantown Transit Center (via MD 118), COMSAT (via Newcut Road), and the MARC Monocacy Station (via MD 85).

**General-Purpose, HOV and Auxiliary Lane Additions** - In Alternate 5C, the HOV lanes described between MD 121 and I-70 in Alternate 5A/B would be terminated at the proposed direct access ramps at the proposed Shockley Drive overpass approximately 0.5 mile south of MD 85. Between MD 121 and I-70, the Alternate 5C highway component is as follows:

- **MD 121 to MD 85 - Between MD 121 and MD 85**, an HOV lane would be added to the inside and one general-purpose lane would be added to the outside in both the northbound and southbound directions. The HOV lanes would terminate at the proposed direct access ramps at the Shockley Drive overpass approximately 0.5 mile south of MD 85. The Shockley Drive overpass is part of a separate planning study, and is designated as a local roadway in the Frederick County Draft Master Plan.
- **MD 85 to I-70** - Between MD 85 and I-70, one additional general-purpose lane and one auxiliary lane between the interchange acceleration/deceleration ramps would be added to the outside in the southbound direction.

**Transit** - Premium Bus is proposed on the existing and proposed HOV lanes on I-270. This service would include slip-ramps for exclusive bus/HOV access from the HOV lanes to the proposed intermodal stations located at the major activity centers in Shady Grove, Gaithersburg, Germantown, Clarksburg, and Frederick. Express bus service would be provided along the I-270 HOV lanes in addition to an extended feeder bus system. Premium bus service offers limited stop service and non-stop service between origins and destinations, running along the existing highway corridor and not a separate transitway alignment.

**d. Transitway Yard/Shop Facilities**

The proposed transitway yard/shop facilities for Alternates 5A and 5B are the same as described in Alternates 3A and 3B. It is assumed that Alternate 5C, premium bus service on HOV lanes, will be operated by a contractor and will not require transitway yard/shop facilities.

e. **Costs**

**Table II-5** indicates the costs for Alternate 5A Enhanced Master Plan HOV/General-Purpose/LRT Alternate, Alternate 5B Enhanced Master Plan HOV/General-Purpose/BRT Alternate, and Alternate 5C Enhanced Master Plan HOV/General-Purpose/Premium Bus Alternate:

**TABLE II-5  
ALTERNATES 5A/B/C CAPITAL COSTS (\$ MILLIONS OF 2001 DOLLARS)**

| <b>Cost Component</b>                         | <b>Alternate 5A</b> | <b>Alternate 5B</b> | <b>Alternate 5C</b> |
|---|---------------------|---------------------|---------------------|
| <i>Highway Capital Costs (\$ in millions)</i> |                     |                     |                     |
| Project Planning                              | \$9                 | \$9                 | \$9                 |
| Preliminary Engineering                       | \$255               | \$255               | \$271               |
| Right-of-Way                                  | \$139               | \$139               | \$139               |
| Construction                                  | \$1,695             | \$1,695             | \$1,804             |
| Subtotal Highway                              | \$2,098             | \$2,098             | \$2,223             |
| <i>Transit Capital Costs (\$ in millions)</i> |                     |                     |                     |
| Subtotal Transit                              | \$857               | \$792               | \$296               |
| Total Cost of Alternate                       | \$2,955             | \$2,890             | \$2,519             |

**Note:** Based on the Maryland Department of Transportation's 2003 to 2008 Consolidated Transportation Program cost estimate.

The transit costs identified in Alternate 5C (\$296 Million) refer to the capital costs associated with the purchase of additional buses to operate the Premium Bus Alternate.

The estimated annual transit operations and maintenance costs (2001 dollars) for Alternates 5A/B/C are as follows:

- Alternate 5A (LRT)                      \$25 Million
- Alternate 5B (BRT)                    \$64 Million
- Alternate 5C (Premium Bus)        \$32 Million